TN Department of Education | College, Career and Technical Education

EXERCISE PHYSIOLOGY

2017-18 Program of Study	Level 1	Level 2	Level 3	Level 4
Clinical Exercise Physiology	Health Science Education (5998)	Anatomy and Physiology (3251 or 5991) -or- Rehabilitation Careers (5990)	Anatomy and Physiology (3251 or 5991) -or- Rehabilitation Careers (5990) **Dual Enrollment** Exercise Physiology (4102)	Exercise Science (6170) -or- Clinical Internship (5993) -or- **Dual Enrollment** Exercise Physiology (4102)
				Industry Certification following 6170 AND 5993: Certified Personal Trainer

Description

Clinical Exercise Physiology is designed to prepare students to pursue careers in kinesiology and exercise physiology services. Upon completion, proficient students will be able to apply concepts of anatomy and physiology, physics, chemistry, bioenergetics, and kinesiology to specific exercise science contexts. Through these connections students will understand the importance that exercise, nutrition, and rehabilitation play in athletes or patients with debilitating or acute metabolic, orthopedic, neurological, psychological, and cardiovascular disorders. In addition, students have the opportunity to incorporate communication, goal setting, and information collection skills in their course work in preparation for future success in the workplace. Students will have the option to participate in a clinical internship at the end of the program.

Exercise Physiology Description

Exercise physiology is a branch of health care that studies the biological effect of exercise on the body's cells and organs. The practice of exercise physiology seeks to prevent chronic diseases or to provide health benefits to those suffering from disease. Exercise physiology treats diseases such as diabetes, cardiovascular disease and obesity.

Physical Therapy Description

Physical therapy uses techniques and exercises to restore movement in patients suffering from injuries, disease or aging. A physical therapy treatment plan uses an assessment of the patient's functional abilities to develop exercises and treatment

that will restore maximum movement. The goal of physical therapy is to improve the quality of life through improved functional abilities and fitness.[1]

Note: This description is included here to decrease confusion between this program of study and Therapeutic Services.

Clinical exercise physiologists offer medically-supervised exercise programs for several different chronic diseases, the most common treat patients with heart or lung diseases. Although some of these programs are separate (heart and lung diseases), many programs are combined, so it is prudent for a clinical exercise professional to have the ability to prescribe exercise for both cardiac and pulmonary patients. In addition, the number of exercise programs available to treat cancer patients is growing, so this is becoming a potential area of employment for clinical exercise professionals. While people who are overweight or mild-to-moderately obese may obtain sufficient help in fitness facilities designed for apparently healthy individuals, medically-supervised weight-loss programs are available for the severely obese. Also, more and more exercise programs for senior citizens are becoming available in settings ranging from community exercise facilities to nursing homes. While exercise programs for the elderly are not always medically supervised, working with this population still requires the knowledge of clinical conditions and medications typically required in clinical exercise settings.

Clinical exercise positions nearly always require a bachelor's degree and often require a master's. Even when a master's degree is not required for an entry-level position, it usually results in a higher salary and may be very helpful in terms of advancing to a supervisory position. In addition to the coursework mentioned above, clinical exercise professionals need a working knowledge of pathophysiology, medications, and exercise testing and prescription for chronically-diseased individuals.[2]

For students interested in chiropractic medicine, this POS provides a strong foundation for an undergraduate pre-chiropractic degree such as Exercise Science and Kinesiology. Students seeking admission to chiropractic programs must complete specific science pre-requisites, but may not have to complete a degree prior to admission. Many students seek a degree in Exercise Science or Kinesiology as their pre-chiropractic program as a way to obtain a bachelor's degree while awaiting admission.

Job Outlook

According to the Bureau of Labor statistics, national employment of exercise physiologists is projected to grow 11 percent from 2014 to 2024, faster than the average for all occupations[3]. Employment data for Tennessee is unavailable at this time. Demand may rise as hospitals emphasize exercise and preventive care as part of their treatment and long-term rehabilitation from

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[1]Kelchner, L. (2016). What Is the Difference Between Exercise Physiology and Physical Therapy? *Chron*. Retrieved from http://work.chron.com/difference-between-exercise-physiology-physical-therapy-26687.html

[2]Davis, P. (2015). Careers in Exercise Physiology. *American Kinesiology Association*. Retrieved from http://www.americankinesiology.org/featured-careers/featured-careers/exercise-physiology

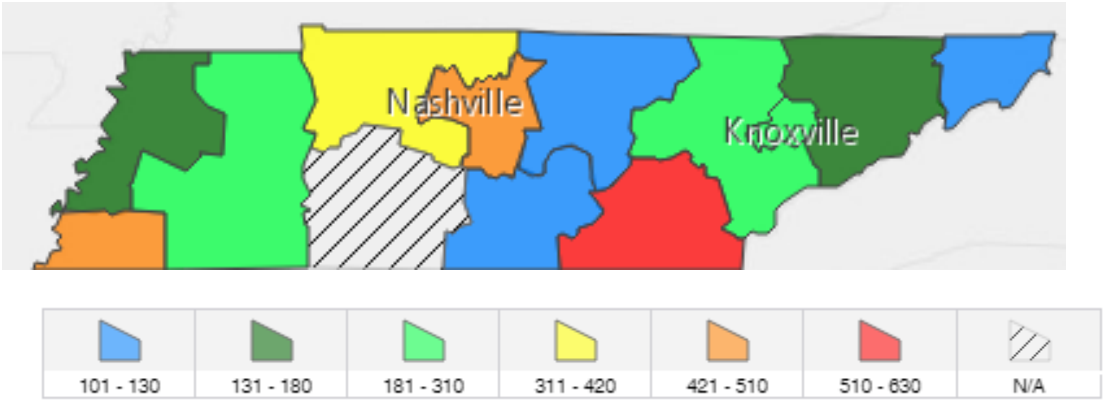
[3]United States Department of Labor, Bureau of Labor Statistics. (2017, April 26). *Occupational Outlook Handbook, 2016-17 Edition.* Retrieved from www.bls.gov/oes.current/oes291128.htm#st

chronic diseases, such as cardiovascular and pulmonary diseases.[4] **Figure 1** shows Tennessee data for occupations that may support the exercise physiologist, **Figure 2** shows physical therapy assistant job distribution while **Figure 3** compares state and national data for physical therapy assistants.

Figure 1. Tennessee employment projections for clinical exercise physiology and related occupations with positive openings projected 2014-2022[5]

Occupation	2014 Estimated Employment	2024 Projected Employment	Total 2014 - 2024 Employment Change	Annual Avg. Percent Change	Median Salary
Massage Therapist	1630	2080	450	2.5%	$33,390
Physical Therapist	4,700	6,690	2,220	4.0%	$85,420
Physical Therapy Assistant	2,330	3,630	1,300	4.5%	$57,490
Physical Therapy Aide	1,180	1,750	580	4.1%	$22,940
Personal Trainer	4,600	5,310	710	1.4%	$34,750

Figure 2. 2014 Projected employment for Physical Therapy Assistants in Tennessee



[4]Bureau of Labor Statistics, U.S. Department of Labor. *Occupational Outlook Handbook, 2016-17 Edition*, Clinical Exercise Physiology. Retrieved from http://www.bls.gov/ooh/healthcare/exercise-physiologists.htm

[5]Tennessee Department of Labor and Workforce Development, Jobs4TN Online. (2016). *Occupational Projections.*Retrieved from https://www.jobs4tn.gov/vosnet/analyzer/results.aspx?session=occproj

Figure 3. State and national trends for physical therapy assistants with positive projections 2014-24[6]

National	Employment		Percent Change	Projected Annual Job Openings
	2014	2024		
Personal Trainer	279,100	302,500	8%	7,490
Tennessee18	**Employment**		**Percent Change**	**Projected Annual Job Openings**
	2014	**2024**		
Personal Trainer	4,600	5,310	15%	120

Postsecondary Opportunities

Upon completion of this POS, students will be prepared to further their training at community colleges and universities in the area of clinical exercise physiology. **Figure 4** outlines the related career opportunities and the training necessary for each. While clinical exercise physiologists require a minimum of a bachelor's degree, physical therapy assistants require an associate degree, massage therapists require a certification, and physical therapy aides can be trained on the job. Also, through the Tennessee Department of Education promoted industry certification, students may become certified personal trainers. The student's portfolio can be used to add credibility to a postsecondary application and would especially helpful should a student choose to enter the workforce upon graduation from high school.

[6] United States Department of Labor, Employment and Training Administration. (2016). *Career One Stop.* Retrieved from www.onetonline.org/link/summary/31-2021.00

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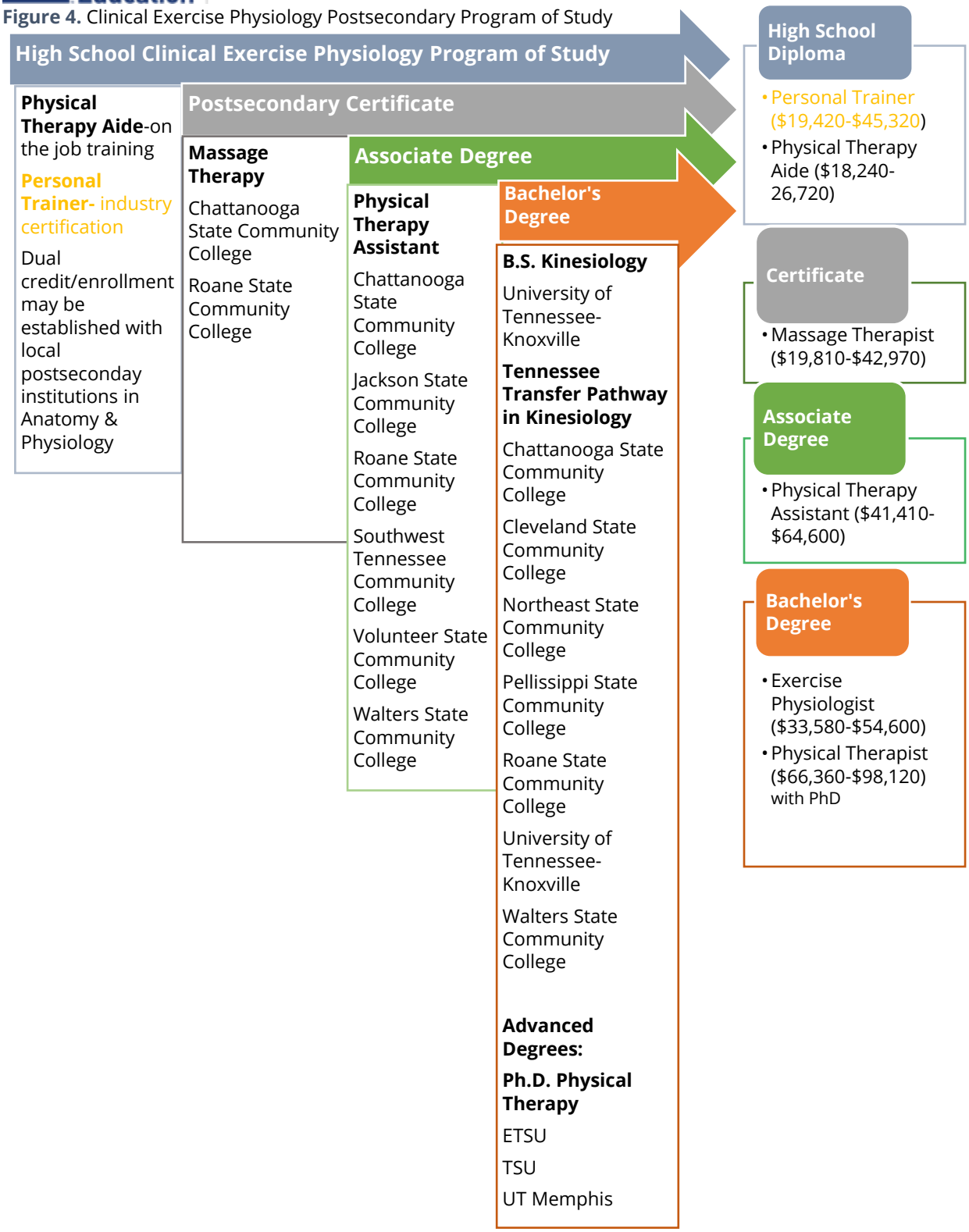
Figure 4. Clinical Exercise Physiology Postsecondary Program of Study



Current Secondary Landscape

The Exercise Physiology program of study was introduced in the 2015-16 SY, and the first Exercise Science courses were taught in the 2016-17 SY. Exercise Physiology POS offerings has increased each year since 2015-16 and with the aligned certification, student enrollment should continue to rise. **Figure 5** shows open enrollment analysis and student enrollment for the Exercise Physiology POS. Concentrator data is unavailable at this time.

Figure 5. Open Enrollment Analysis[7]

SY	Exercise Physiology
2015-16	13
2016-17	25
2017-18	79

Student Enrollment

SY	Health Science Education	Rehabilitative Careers	Anatomy & Physiology	Exercise Science
2013-14	13622	2661	3914	0
2014-15	13624	2370	3782	0
2015-16	14563	2478	3990	177

Exercise Physiology Concentrators

SY	Exercise Physiology Concentrators
2013-14	n.d.
2014-15	n.d.
2015-16	n.d.
2016-17	n.d.

[7] Tennessee Department of Education. (2017). *Student Enrollment Data*. Retrieved from Author's calculation of student enrollment data.

Recommendations

To align the Exercise Physiology POS name with postsecondary nomenclature, it is recommended that the POS name be changed to *Sport and Human Performance*. This name specifically aligns to department names at universities across the state where students will continue their education in Exercise Physiology.

No other recommendations at this time.

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References

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United States Department of Labor, Employment and Training Administration. (2016). *Career One Stop.* Retrieved from www.onetonline.org/link/summary/31-2021.00